



#4

1

SEQUENCE LISTING

<110> Adler, David A.
Holloway, James L.
Baindur, Nand
Beigel-Orme, Stephanie
Sheppard, Paul O.

<120> NOVEL BETA-DEFENSINS

<130> 97-44D1

<140> US 10/091,166

<141> 2002-03-05

<150> US 09/636,399

<151> 2000-08-10

<150> US 09/344,097

<151> 1999-06-25

<150> US 09/150,786

<151> 1998-09-10

<150> US 60/064,294

<151> 1997-11-05

<150> US 60/058,335

<151> 1997-09-10

<160> 72

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1				5					10					15		

cct	gtt	cca	ggt	cat	gga	gga	atc	ata	aac	aca	tta	cag	aaa	tat	tat	96
Pro	Val	Pro	Gly	His	Gly	Gly	Ile	Ile	Asn	Thr	Leu	Gln	Lys	Tyr	Tyr	
			20					25					30			

tgc	aga	gtc	aga	ggc	ggc	cgg	tgt	gct	gtg	ctc	agc	tgc	ctt	cca	aag	144
Cys	Arg	Val	Arg	Gly	Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	
		35					40					45				

gag	gaa	cag	atc	ggc	aag	tgc	tcg	acg	cgt	ggc	cga	aaa	tgc	tgc	cga	192
Glu	Glu	Gln	Ile	Gly	Lys	Cys	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Cys	Arg	
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Arg				
65				

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 Pro Val Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr
 20 25 30
 Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
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 Glu Glu Gln Ile Gly Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg
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 Arg
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<221> VARIANT
 <222> (24)...(29)
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 1 5 10 15
 Xaa Xaa Xaa Xaa Gly Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Cys
 20 25 30

<210> 4
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 <213> Artificial Sequence

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 SEQ ID NO:2.

<221> misc_feature
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 <223> n = a, g, c or t

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 ggnathatha ayacnytnca raartrrrnn tgymgngtnm gnggnggnmg ntgygcngtn 120
 ytnwsntgyy tncnaarga rgarcarath ggnaartgyw snacnmngng nmgnartgy 180
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<400> 7
 ggaggaatca taaacaca 18

<210> 8
 <211> 18
 <212> DNA
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<220>
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<400> 8
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<210> 9
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<220>
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 tgttctgcat ggtgagagggc attggaatga tgcatacagaa aacatgtcat aatgtcatca 120
 ctgtaatatg acaagaattg cagctgtggc tggaaccctt ataaagtgc caagcacacc 180
 ttttcatcca gtctcagcgt ggggtgaagc ctacgagct atg agg atc cat tat 234
 Met Arg Ile His Tyr
 1 5

ctt ctg ttt gct ttg ctc ttc ctg ttt ttg gtg cct gtt cca ggt cat 282
 Leu Leu Phe Ala Leu Phe Leu Phe Leu Val Pro Val Pro Gly His
 10 15 20

gga gga atc ata aac aca tta cag aaa tat tat tgc aga gtc aga ggc 330
 Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Gly
 25 30 35

ggc cgg tgt gct gtg ctc agc tgc ctt cca aag gag gaa cag atc ggc 378

Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Gly
 40 45 50

aag tgc tgc acg cgt ggc cga aaa tgc tgc cga aga aag aaa 420
 Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg Arg Lys Lys
 55 60 65

taaaaaccct gaaacatg 438

<210> 10
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 Pro Val Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr
 20 25 30
 Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
 35 40 45
 Glu Glu Gln Ile Gly Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg
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 Arg Lys Lys
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 cayggnggna thathaayac nytncaraar trnnnttgym gngtnmgngg nggnmgntgy 120
 gcngtytnw sntgyytnc naargargar carathggna artgywsnac nmngnggnmgn 180
 aartgytgym gnmgnaaraa rtraarccn trraayatg 219

<210> 12
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide ZC15591

<400> 12
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<210> 13
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<220>
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<400> 13
 gaacaggcac caaaaacagg aagag 25

<210> 14

<211> 37
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<400> 14
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 1 5 10 15
 Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg
 20 25 30
 Lys Cys Cys Arg Arg
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<221> VARIANT
 <222> (26)...(26)
 <223> leucine, isoleucine, valine, phenylalanine, or
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 1 5 10 15
 Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 20 25

<210> 16
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<221> VARIANT
 <222> (26)...(26)
 <223> leucine, isoleucine, valine, phenylalanine, or
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<400> 16
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 20 25 30

<210> 17
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<221> VARIANT
 <222> (26)...(26)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 17
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 Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg
 20 25

<210> 18
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<400> 18
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 1 5 10 15
 Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg
 20 25 30
 Lys Cys Cys Arg Arg Lys
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<210> 19
 <211> 39
 <212> PRT
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<220>
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<400> 19
 Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu Ser
 1 5 10 15
 Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg
 20 25 30
 Lys Cys Cys Arg Arg Lys Lys
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<210> 20
 <211> 44
 <212> PRT
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<220>
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 1 5 10 15
 Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys
 20 25 30
 Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys Lys
 35 40

<210> 21
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 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<400> 21
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Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys
 20 25 30
 Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys
 35 40

<210> 22
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 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<400> 22
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 Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys
 20 25 30
 Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg
 35 40

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<220>
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 Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser
 20 25 30
 Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys Lys
 35 40

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<220>
 <223> Defensin polypeptide

<400> 24
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 Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser
 20 25 30
 Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys
 35 40

<210> 25
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 <212> PRT
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<220>
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<400> 25
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 Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser

Thr Arg Tyr Arg Lys Cys Cys Arg Arg 30
 20 25
 35 40

<210> 26
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 20 25 30
 Arg Tyr Arg Lys Cys Cys Arg Arg Lys Lys
 35 40

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 Arg Tyr Arg Lys Cys Cys Arg Arg Lys
 35 40

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<400> 28
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 Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr
 20 25 30
 Arg Tyr Arg Lys Cys Cys Arg Arg
 35 40

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<220>
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 20 25 30

Tyr Arg Lys Cys Cys Arg Arg Lys Lys
 35 40

<210> 30
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 20 25 30
 Tyr Arg Lys Cys Cys Arg Arg Lys
 35 40

<210> 31
 <211> 39
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<400> 31
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 Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg
 20 25 30
 Tyr Arg Lys Cys Cys Arg Arg
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 <212> PRT
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<220>
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 Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr
 20 25 30
 Arg Lys Cys Cys Arg Arg Lys Lys
 35 40

<210> 33
 <211> 39
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<400> 33
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 1 5 10 15
 Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr
 20 25 30
 Arg Lys Cys Cys Arg Arg Lys

35

<210> 34
 <211> 38
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<400> 34
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 1 5 10 15
 Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr
 20 25 30
 Arg Lys Cys Cys Arg Arg
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<210> 35
 <211> 49
 <212> PRT
 <213> Artificial Sequence

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 methionine

<400> 35
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 1 5 10 15
 Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu
 20 25 30
 Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 35 40 45
 Lys

<210> 36
 <211> 48
 <212> PRT
 <213> Artificial Sequence

<220>
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<221> VARIANT
 <222> (45)...(45)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 36
 Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg
 1 5 10 15
 Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu
 20 25 30
 Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 35 40 45

<210> 37
 <211> 48
 <212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (44)...(44)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 37

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Arg	Gly	Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu	Glu	Cys
			20					25					30		
Ile	Gly	Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg	Lys	Lys
		35					40					45			

<210> 38

<211> 47

<212> PRT

<213> Artificial Sequence

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<223> Defensin polypeptide

<221> VARIANT

<222> (44)...(44)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 38

Gly	His	Gly	Gly	Ile	Ile	Asn	Thr	Leu	Gln	Leu	Tyr	Tyr	Cys	Arg	Val
1				5					10					15	
Arg	Gly	Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu	Glu	Cys
			20					25					30		
Ile	Gly	Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg	Lys	
		35					40					45			

<210> 39

<211> 47

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (43)...(43)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 39

His	Gly	Gly	Ile	Ile	Asn	Thr	Leu	Gln	Leu	Tyr	Tyr	Cys	Arg	Val	Arg
1			5					10						15	
Gly	Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu	Glu	Cys	Ile
			20					25				30			
Gly	Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg	Lys	Lys	
		35					40					45			

<210> 40

<211> 46

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (43)...(43)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 40

His	Gly	Gly	Ile	Ile	Asn	Thr	Leu	Gln	Leu	Tyr	Tyr	Cys	Arg	Val	Arg
1				5					10					15	
Gly	Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu	Glu	Cys	Ile
		20						25					30		
Gly	Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg	Lys		
	35						40					45			

<210> 41

<211> 46

<212> PRT

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<221> VARIANT

<222> (42)...(42)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 41

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1				5					10					15	
Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu	Glu	Cys	Ile	Gly
		20						25					30		
Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg	Lys	Lys		
		35					40					45			

<210> 42

<211> 45

<212> PRT

<213> Artificial Sequence

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<223> Defensin polypeptide

<221> VARIANT

<222> (42)...(42)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 42

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1				5					10					15	
Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu	Glu	Cys	Ile	Gly
		20						25					30		
Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg	Lys	Lys		
		35					40					45			

<210> 43

<211> 45

<212> PRT

<213> Artificial Sequence

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<223> Defensin polypeptide

<221> VARIANT

<222> (41)...(41)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 43

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Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys
      20           25           30
Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
      35           40           45

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<210> 44

<211> 44

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (41)...(41)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 44

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Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly
 1           5           10           15
Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys
      20           25           30
Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
      35           40

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<210> 45

<211> 44

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (40)...(40)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 45

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 1           5           10           15
Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met
      20           25           30
Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
      35           40

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<210> 46

<211> 43

<212> PRT

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<223> Defensin polypeptide

<221> VARIANT

<222> (40)...(40)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

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 Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met
 20 25 30
 Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 35 40

<210> 47
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<220>
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<221> VARIANT
 <222> (39)...(39)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 47
 Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys
 1 5 10 15
 Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser
 20 25 30
 Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
 35 40

<210> 48
 <211> 42
 <212> PRT
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<220>
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<221> VARIANT
 <222> (39)...(39)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 48
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 1 5 10 15
 Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser
 20 25 30
 Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 35 40

<210> 49
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 <212> PRT
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<220>
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<221> VARIANT
 <222> (38)...(38)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

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15
 1 5 10 15
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 20 25 30
 Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
 35 40

<210> 50
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<220>
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<221> VARIANT
 <222> (38)...(38)
 <223> leucine, isoleucine, valine, phenylalanine, or methionine

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 1 5 10 15
 Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr
 20 25 30
 Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 35 40

<210> 51
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<220>
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<221> VARIANT
 <222> (37)...(37)
 <223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 51
 Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val
 1 5 10 15
 Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg
 20 25 30
 Gly Arg Lys Cys Xaa Arg Arg Lys Lys
 35 40

<210> 52
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<220>
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<221> VARIANT
 <222> (37)...(37)
 <223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 52
 Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val
 1 5 10 15
 Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg
 20 25 30

Gly Arg Lys Cys Xaa Arg Arg Lys
 35 40

<210> 53
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<220>
 <223> Defensin polypeptide

<221> VARIANT
 <222> (36)...(36)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 53
 Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu
 1 5 10 15
 Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly
 20 25 30
 Arg Lys Cys Xaa Arg Arg Lys Lys
 35 40

<210> 54
 <211> 39
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<220>
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<221> VARIANT
 <222> (36)...(36)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 54
 Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu
 1 5 10 15
 Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly
 20 25 30
 Arg Lys Cys Xaa Arg Arg Lys
 35

<210> 55
 <211> 39
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<221> VARIANT
 <222> (35)...(35)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 55
 Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser
 1 5 10 15
 Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg
 20 25 30
 Lys Cys Xaa Arg Arg Lys Lys
 35

<210> 56
 <211> 38
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<220>
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<221> VARIANT
 <222> (35)...(35)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 56
 Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser
 1 5 10 15
 Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg
 20 25 30
 Lys Cys Xaa Arg Arg Lys
 35

<210> 57
 <211> 38
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<221> VARIANT
 <222> (34)...(34)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 57
 Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys
 1 5 10 15
 Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys
 20 25 30
 Cys Xaa Arg Arg Lys Lys
 35

<210> 58
 <211> 37
 <212> PRT
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<220>
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<221> VARIANT
 <222> (34)...(34)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 58
 Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys
 1 5 10 15
 Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys
 20 25 30
 Cys Xaa Arg Arg Lys
 35

<210> 59
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<212> PRT
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<220>
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<221> VARIANT
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 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 59
 Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu
 1 5 10 15
 Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys
 20 25 30
 Xaa Arg Arg Lys Lys
 35

<210> 60
 <211> 36
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<220>
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<221> VARIANT
 <222> (33)...(33)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 60
 Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu
 1 5 10 15
 Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys
 20 25 30
 Xaa Arg Arg Lys
 35

<210> 61
 <211> 36
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<220>
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<221> VARIANT
 <222> (32)...(32)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 61
 Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro
 1 5 10 15
 Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa
 20 25 30
 Arg Arg Lys Lys
 35

<210> 62
 <211> 35
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<221> VARIANT

<222> (32)...(32)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 62

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Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro
 1      5      10      15
Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa
      20      25      30
Arg Arg Lys
      35

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<210> 63

<211> 35

<212> PRT

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<223> Defensin polypeptide

<221> VARIANT

<222> (31)...(31)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 63

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Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
 1      5      10      15
Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg
      20      25      30
Arg Lys Lys
      35

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<210> 64

<211> 34

<212> PRT

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<223> Defensin polypeptide

<221> VARIANT

<222> (31)...(31)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 64

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Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
 1      5      10      15
Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg
      20      25      30
Arg Lys

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<210> 65

<211> 34

<212> PRT

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<220>

<223> Defensin polypeptide

<221> VARIANT
 <222> (30)...(30)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 65
 Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu
 1 5 10 15
 Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg
 20 25 30
 Lys Lys

<210> 66
 <211> 33
 <212> PRT
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<220>
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<221> VARIANT
 <222> (30)...(30)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 66
 Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu
 1 5 10 15
 Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg
 20 25 30
 Lys

<210> 67
 <211> 33
 <212> PRT
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<220>
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<221> VARIANT
 <222> (29)...(29)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 67
 Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu
 1 5 10 15
 Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 20 25 30
 Lys

<210> 68
 <211> 32
 <212> PRT
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<220>
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<221> VARIANT
 <222> (29)...(29)
 <223> leucine, isoleucine, valine, phenylalanine, or

methionine

<400> 68

Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu
 1 5 10 15
 Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 20 25 30

<210> 69

<211> 32

<212> PRT

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<221> VARIANT

<222> (28)...(28)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 69

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 Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
 20 25 30

<210> 70

<211> 31

<212> PRT

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<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (28)...(28)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 70

Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys
 1 5 10 15
 Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 20 25 30

<210> 71

<211> 31

<212> PRT

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<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (27)...(27)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 71

Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile
 1 5 10 15
 Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
 20 25 30

<210> 72
 <211> 30
 <212> PRT
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<220>
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<221> VARIANT
 <222> (27)...(27)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 72
 Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile
 1 5 10 15
 Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 20 25 30